Trend Study 17-59-00

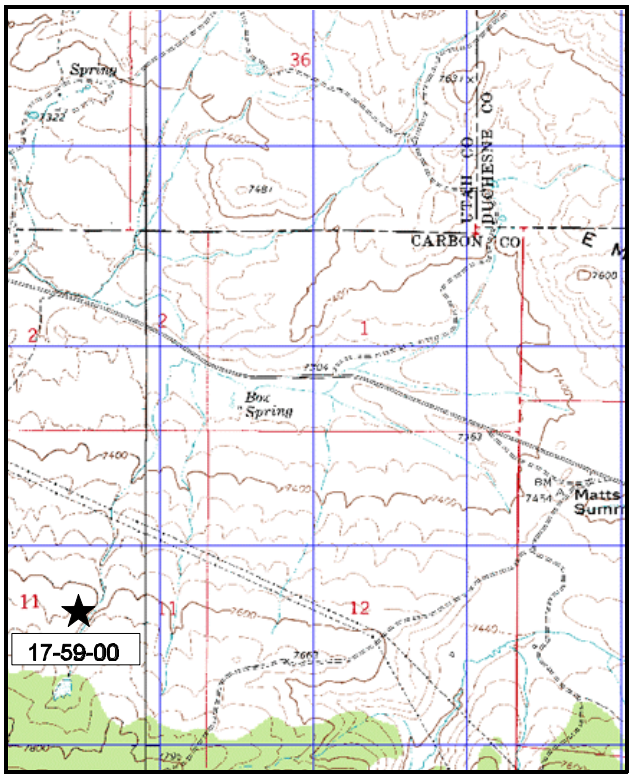
Study site name: Emma Park . Range type: Big Sagebrush .

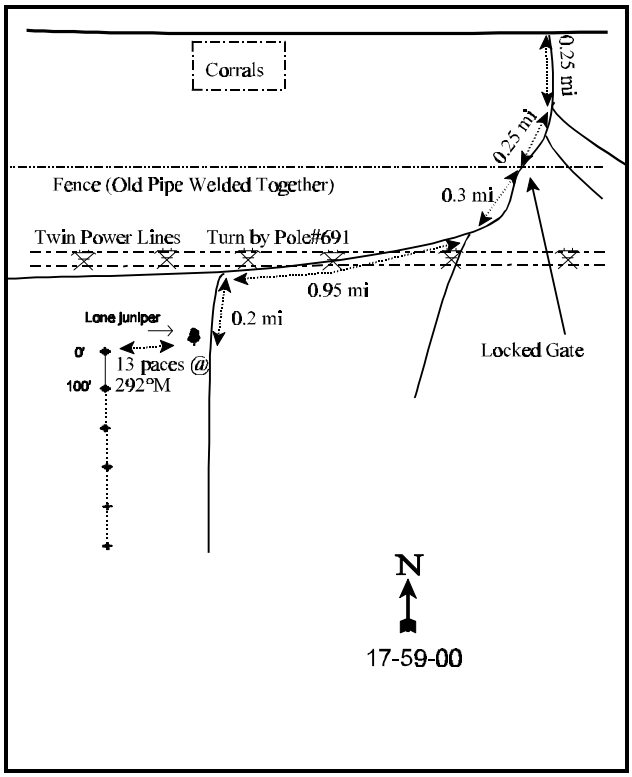
Compass bearing: frequency baseline 186°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Traveling south on Highway 6 take a left on the road that leads to Kyune and travel 5.75 miles. Turn right and go 0.25 miles. Veer right for 0.15 miles to a fork. Continue right for 0.1 miles to a locked gate. Go through the gate for 0.3 miles. Veer right and go 0.95 miles following the power lines. Turn left for 0.2 miles to a high lined juniper. The 0 foot stake is 13 paces away @ 292°M.





Map Name: Kyune

Diagrammatic Sketch

Township 12S , Range 9E , Section 11

UTM. 4405280.754 N, 510327.007 E

DISCUSSION

Trend Study No. 17-59 (32-19)

The Emma Park study site was established in 1994 and was selected because of the perceived increase of winter use by elk in the area. It is located on one of the many moderately north sloping ridges in the area that drain into Horse Creek, which in turn drains southwest into the Price River. The elevation of the site is about 7,400 feet. The site is located within the sagebrush-grass type. Species diversity is very high with 56 species found on the inventoried transects. Deer appear to be using this area as transitional and summer range. Deer were seen on site during the 2000 reading. Quadrat frequency of elk and deer pellet groups was fairly high in 1994 at 25% and 19% respectively. Perhaps due to the mild winter of 1999-2000, quadrat frequency of elk and deer pellet groups dropped to 6% and 8%. A pellet group transect read along the study site baseline in 2000 estimates 13 elk, 15 deer and 20 cow days use/acre (32 edu/ha, 37 ddu/ha and 50 cdu/ha). Cattle use the area during the summer as part of the Price Canyon East allotment which is used by 108 cattle from May 17 to November 15. Rabbit pellets were also common.

Soil on the site is moderately deep with an effective rooting depth estimated at just over 14 inches. The soil has a clay loam texture and a neutral soil reaction (pH of 7.0). Small rocks are common on the surface and within the profile in some areas, but the soil is deeper and relatively rock free in areas where soil has accumulated over time. Rocky areas support far fewer and smaller shrubs, while the deeper soil along the end of the baseline supports very large and robust sagebrush. There is little current evidence of erosion, but historically the area exhibits signs of heavy soil loss.

Nine species of shrubs were sampled on the site in 2000. Mountain big sagebrush is the dominant shrub with a density of 4,640 plants/acre in 1994 and 4,600 in 2000. It provides an average of 72% of the total browse cover with a cover value of 22% in 1994 and 19% in 2000. In areas with deeper soil, some of the sagebrush appears to be basin big sagebrush (*Artemisia tridentata tridentata*). These plants are very tall and robust with a height of 5 feet and a crown of nearly 4 feet. Most of the sagebrush sampled are considered to be mountain big sagebrush (*Artemisia tridentata vaseyana*) although there appears to be some hybridizing between the two subspecies. Use of the sagebrush is mostly light and vigor good. Percent decadence is low and reproduction good. The high cover of sagebrush combined with grazing pressure appears to be suppressing the herbaceous understory to some extent. At this elevation, open areas should produce much more abundant grass and forb cover.

Other desirable shrubs include some moderate to heavy browsed serviceberry and a few scattered heavily hedged bitterbrush. Stickyleaf low rabbitbrush and Oregon grape are abundant understory shrubs. They are unutilized and appear to have stable, mostly mature populations.

The herbaceous understory is moderately abundant and diverse. It contributed 34% of the total vegetative cover in 1994 and 43% in 2000. More than half of this cover is made up by forbs. The herbaceous species could provide good transition range forage in the fall and spring. Salina wildrye, thickspike wheatgrass, Letterman needlegrass, Kentucky bluegrass and mutton bluegrass are all fairly abundant. It appears that most of the thickspike was misidentified as Salina wildrye in 1994 and Kentucky bluegrass was misidentified as mutton bluegrass. Kentucky bluegrass appeared to be heavily utilized in 2000.

Forbs are diverse with several preferred species sampled. The most common species is desert phlox which provided 46% of the forb cover in 2000. Looseleaf milkvetch and lobeleaf groundsel are also abundant.

1994 APPARENT TREND ASSESSMENT

The soil appears stable because of excellent vegetative cover, good litter cover and a low percentage of bare ground. The browse also appears stable with good vigor and productivity. The herbaceous understory is abundant and diverse with good species diversity and excellent cover values.

2000 TREND ASSESSMENT

Trend for soil is stable with abundant vegetation and litter cover to provide adequate protection from erosion. Trend for the key browse, mountain big sagebrush is also stable. Population density is not changed but the number of decadent plants has declined. Use is mostly light to moderate, vigor is good and reproduction adequate to maintain the stand. Trend for the herbaceous understory is up slightly due to an increase in the sum of nested frequency of grasses and forbs. A reduction in sagebrush cover would further increase production of the herbaceous understory.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up slightly (4)

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 59

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'00	'94	'00	'94	'00
G	Agropyron dasystachyum	8	*101	4	35	.21	1.11
G	Bromus anomalus	6	7	2	3	.01	.04
G	Bromus tectorum (a)	3	9	1	3	.00	.09
G	Carex spp.	9	*46	3	18	.18	.72
G	Elymus salina	242	*86	74	26	5.72	2.36
G	Koeleria cristata	-	1	-	1	-	.03
G	Poa fendleriana	132	*85	45	29	.90	1.50
G	Poa secunda	-	12	-	4	-	.07
G	Poa pratensis	-	*111	-	31	-	2.58
G	Stipa lettermani	32	*70	12	32	.28	1.19
Total for Annual Grasses		3	9	1	3	0.00	0.08
Total for Perennial Grasses		429	519	140	179	7.31	9.63
Total for Grasses		432	528	141	182	7.32	9.72
F	Achillea millefolium	34	*61	14	24	.17	.73
F	Antennaria parvifolia	3	*23	2	10	.06	.32
F	Androsace septentrionalis (a)	2	6	1	3	.00	.01
F	Arabis drummondi	12	*3	6	1	.03	.00
F	Aster chilensis	33	*15	9	5	.14	.19

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'00	'94	'00	'94	'00
F	Astragalus convallarius	25	*5	14	3	.26	.07
F	Astragalus tenellus	60	77	28	33	1.14	.57
F	Astragalus spp.	9	-	3	-	.06	-
F	Astragalus utahensis	-	*6	-	4	-	.07
F	Castilleja linariaefolia	7	3	3	1	.16	.00
F	Calochortus nuttallii	3	-	1	-	.00	-
F	Chenopodium album (a)	1	-	1	-	.00	-
F	Chaenactis douglasii	7	6	3	5	.01	.05
F	Cirsium spp.	-	2	-	1	-	.00
F	Comandra pallida	14	*39	6	16	.03	.25
F	Collinsia parviflora (a)	44	*-	19	-	.19	-
F	Crepis acuminata	3	-	2	-	.41	-
F	Erigeron eatonii	65	*34	26	13	.42	.14
F	Erigeron flagellaris	1	4	1	2	.00	.01
F	Eriogonum umbellatum	3	4	1	2	.03	.06
F	Gayophytum ramosissimum (a)	3	2	1	1	.00	.00
F	Gilia spp. (a)	2	-	2	-	.01	-
F	Hedysarum boreale	-	3	-	1	-	.03
F	Helianthella uniflora	1	24	1	10	.00	.37
F	Ipomopsis aggregata	-	2	-	1	-	.00
F	Lomatium spp.	-	2	-	1	-	.00
F	Lupinus argenteus	35	35	14	17	.21	.59
F	Lychnis drummondii	1	6	1	2	.00	.41
F	Machaeranthera canescens	5	-	3	-	.01	-
F	Orthocarpus spp. (a)	-	1	-	1	-	.00
F	Penstemon caespitosus	13	24	5	9	.07	.19
F	Penstemon humilis	11	13	5	4	.10	.04
F	Penstemon watsonii	23	19	9	10	.41	.20
F	Phlox austromontana	142	156	43	49	3.72	5.16
F	Phlox longifolia	3	1	1	1	.00	.00
F	Polygonum douglasii (a)	10	-	5	-	.02	-
F	Potentilla gracilis	4	*11	2	7	.01	.08
F	Schoencrambe linifolia	2	2	1	2	.00	.01
F	Senecio integerrimus	9	8	5	4	.03	.07
F	Senecio multilobatus	15	*103	8	43	.04	1.37

Type	Species	Nested Frequency '94	Nested Frequency '00	Quadrat Frequency '94	Quadrat Frequency '00	Average Cover % '94	Average Cover % '00
F	Sphaeralcea coccinea	3	-	1	-	.00	-
F	Taraxacum officinale	6	*31	3	11	.01	.18
F	Thalictrum fendleri	3	8	2	3	.06	.06
F	Zigadenus paniculatus	1	-	1	-	.00	-
Total for Annual Forbs		62	9	29	5	0.24	0.02
Total for Perennial Forbs		556	730	224	295	7.70	11.31
Total for Forbs		618	739	253	300	7.94	11.34

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 17 , Study no: 59

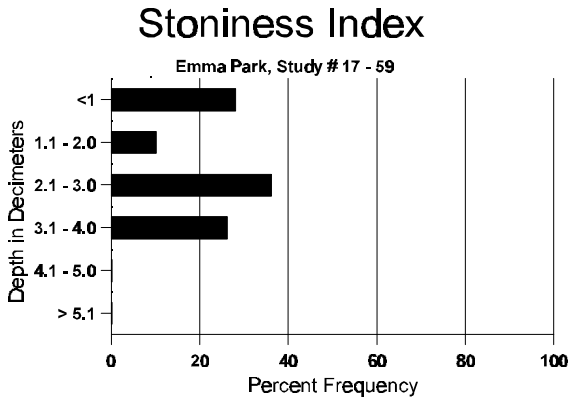
Type	Species	Strip Frequency '94	Strip Frequency '00	Average Cover % '94	Average Cover % '00
B	Amelanchier utahensis	9	8	.18	.33
B	Artemisia tridentata tridentata	0	3	-	.68
B	Artemisia tridentata vaseyana	88	93	21.89	19.21
B	Cercocarpus montanus	1	0	.03	-
B	Chrysothamnus depressus	4	8	.19	.27
B	Chrysothamnus viscidiflorus viscidiflorus	74	64	3.73	4.61
B	Gutierrezia sarothrae	3	4	.00	.03
B	Mahonia repens	22	23	.65	1.06
B	Purshia tridentata	0	1	-	-
B	Ribes spp.	0	1	-	-
B	Rosa woodsii	3	3	.00	.03
B	Symphoricarpos oreophilus	28	24	2.66	2.14
B	Tetradymia canescens	1	2	-	.00
Total for Browse		233	234	29.34	28.37

BASIC COVER --
Herd unit 17 , Study no: 59

Cover Type	Nested Frequency		Average Cover %	
	'94	'00	'94	'00
Vegetation	413	430	43.04	50.81
Rock	212	134	5.51	6.91
Pavement	143	206	1.48	7.57
Litter	481	469	47.61	59.09
Cryptogams	66	30	.60	1.20
Bare Ground	303	230	14.02	18.48

SOIL ANALYSIS DATA --
Herd Unit 17, Study # 59, Study Name: Emma Park

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.44	49.2 (14.88)	7.0	29.4	31.1	39.3	4.0	10.6	137.6	0.8



PELLET GROUP FREQUENCY --
Herd unit 17 , Study no: 59

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'94	'00	'00	'00
Rabbit	16	24	292	N/A
Moose	2	-	-	-
Elk	25	6	165	13 (31)
Deer	19	8	191	15 (36)
Cattle	6	2	244	20 (50)

BROWSE CHARACTERISTICS --
Herd unit 17 , Study no: 59

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
Y	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	2	3	-	-	-	-	-	-	-	4	-	1	-	100			5
M	94	3	-	3	1	-	-	-	-	-	5	-	1	1	140	16	11	7
	00	-	1	-	1	-	1	1	-	-	3	-	1	-	80	15	17	4
D	94	-	-	-	-	1	1	-	-	-	2	-	-	-	40			2
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	10%	40%	20%	+ 0%
'00	40%	10%	30%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	200	Dec:		20%
'00	200			10%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata tridentata																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	1	-	3	-	-	-	60	61	45	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	0	Dec:	-
'00	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	94	-	-	-	1	-	-	-	-	-	1	-	-	-	40			2
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	94	24	-	-	2	-	-	-	-	-	26	-	-	-	520			26
	00	39	-	-	-	-	-	-	-	-	39	-	-	-	780			39
M	94	129	16	-	4	-	-	-	-	-	148	1	-	-	2980	28	34	149
	00	118	34	-	13	-	-	-	-	-	165	-	-	-	3300	28	35	165
D	94	51	2	3	1	-	-	-	-	-	42	3	-	12	1140			57
	00	21	5	-	-	-	-	-	-	-	16	-	-	10	520			26
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	720			36
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	580			29

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	08%	01%	05%	- 1%
'00	17%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	4640	Dec:	25%
	'00	4600		11%

Cercocarpus montanus																		
M	94	-	1	-	-	-	-	-	-	-	-	-	-	1	20	9	12	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	100%	00%	100%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	20	Dec:	-
	'00	0		-

Chrysothamnus depressus																		
M	94	5	1	-	3	-	-	-	-	-	9	-	-	-	180	4	10	9
	00	14	1	-	-	-	-	-	-	-	15	-	-	-	300	3	7	15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	11%	00%	00%	+40%
'00	07%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	180	Dec:	-
	'00	300		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	5	-	-	2	-	-	-	-	-	7	-	-	-	140			7
M	94	198	-	-	31	-	-	9	-	-	237	-	-	1	4760	11	13	238
	00	166	1	-	16	-	-	3	-	-	186	-	-	-	3720	9	13	186
D	94	1	-	-	1	-	-	-	-	-	1	-	-	1	40			2
	00	7	-	-	-	-	-	-	-	-	6	-	-	1	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	.83%	-17%
'00	.50%	00%	.50%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	4800	Dec:		1%
'00	4000			4%

Gutierrezia sarothrae																		
Y	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80	6	9	4
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240	4	7	12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	120	Dec:	-
'00	240		-

Mahonia repens																		
Y	94	27	-	-	8	-	-	-	-	-	35	-	-	-	700			35
	00	48	-	-	1	-	-	-	-	-	49	-	-	-	980			49
M	94	167	-	-	11	-	-	-	-	-	178	-	-	-	3560	3	4	178
	00	205	-	-	24	-	-	41	-	-	270	-	-	-	5400	3	4	270

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	+33%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	4260	Dec:	-
'00	6380		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	30	0
	00	-	-	2	-	-	-	-	-	-	2	-	-	-	40	20	50	2
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'00	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'00	40			-

Ribes spp.																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'00	20			-

Rosa woodsii																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	94	5	-	-	2	-	-	-	-	-	7	-	-	-	140	7	7	7
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	19	8	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	-43%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	140	Dec:		-
'00	80			-

Symphoricarpos oreophilus																		
Y	94	-	-	-	6	-	-	-	-	-	6	-	-	-	120			6
	00	8	-	-	1	-	-	-	-	-	8	-	1	-	180			9
M	94	48	3	1	10	-	-	2	-	-	64	-	-	-	1280	18	25	64
	00	18	1	-	18	-	-	-	-	-	37	-	-	-	740	15	17	37
D	94	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	06%	01%	00%	-35%
'00	02%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	1420	Dec:		1%
'00	920			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	4	0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
D	94	-	2	-	-	-	-	-	-	-	-	-	-	2	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	100%	00%	100%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	40	Dec:		100%
'00	80			0%